Donlin Gold Project Draft EIS
Issues and Concerns
April 13, 2016 Draft

Human Health and Subsistence

- DEIS Section 3.22, Human Health, states "The HIA is still under development, but the available baseline health data were used to develop the description of the affected environment." The section goes on to describe not only baseline health information, but makes predictions and draws conclusions about potential impacts of the project. For the proposed action: "Impacts would generally be considered medium in magnitude and intensity. The duration of the impacts would generally be considered very high and the duration would be medium to high in geographic extent. Overall effects would be considered medium." For exposure to potentially hazardous materials, "Adverse impacts from exposure to potentially hazardous materials are generally considered low." Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

- Air Quality.
    - No specific data was available on air quality in the analysis area. Soils in the mine area have high arsenic levels (78.8 ppm). Mercury and antimony levels exceed ADEC's soil cleanup levels. Expected emissions of criteria pollutants from the mine site were evaluated and "found to be well below the air quality standards and threshold values that would trigger permitting requirements." The conclusion in the DEIS is that the human health risk associated with addition of project-related arsenic to soils in the vicinity of the mine site does not exceed Alaska's acceptable risk levels for contaminated sites and is considered to be insignificant in magnitude when compared to baseline. This is also consistent with EPA's interpretation of background risks and source-related risks." (3.22-64).
    - Ex. 5 Deliberative Process (DP)
- Water Quality
    - "The Kuskokwim River is listed as a Category 5 water body about 30 miles upriver of Crooked Creek at the mouth of Red Devil Creek because abandoned mining facilities contribute antimony, arsenic, and mercury to the water. The designation extends from 100 feet upriver of the confluence of Red Devil Creek and the Kuskokwim River to 900 feet downriver from the confluence."
    - Water quality monitoring in the area indicates that maximum concentrations of many analytes, including mercury and arsenic exceeded the relevant standards (3.7-25).
    - Frequency of antimony detection is 8.8 – 26.9% (dissolved) and 7.7 – 29.2% (total)
      Frequency of arsenic detection is 5.7 – 70.5% (dissolved) and 15.9 – 80.2 % (total)
      Frequency of mercury detection: 96.7 – 100% (dissolved) and 95.7 – 99% (total)
    - Range of concentrations:
      Antimony, dissolved 0.316 - 4.93 ug/L; total 0.322 – 7.17 ug/L; **MCL is 6.0 ug/L**
      Arsenic, dissolved 1.00 - 12.8 ug/L; total 0.9 – 194 ug/L; **MCL is 10 ug/L**
      Mercury, dissolved 0.551 – 24.3 ug/L; total 0.1 – 170 ug/L; **MCL is 2.0 ug/L**

- Naturally elevated mercury levels are found sporadically in surface and groundwater within and surrounding the proposed mine site. Concentrations of mercury in surface and groundwater samples collected from both within and outside of the proposed mine site exceeded the applicable water quality standard. The methyl mercury concentrations in Crooked Creek and the Donlin Creek watershed is estimated at 0.28 ng/L (p. 153). The median national MeHg concentration is 0.11 ng/L The concentration in water in the Donlin Creek watershed is above the national average predicted in other streams and is more than two times higher than the natural medial value.
- Mercury is also present in sediment samples, especially down gradient of mineralized areas. The more harmful form of mercury, methylmercury, is present in existing sediment as well. Mercury levels in sediments ranged from 130 to 1,080 ng/g, which is higher than the ADEC Sediment Quality Guidelines recommended by ADEC (2013b) for use at contaminated sites include Threshold Effects Levels (TELs) and Probable Effects Levels (PELs). TELs are concentrations below which adverse effects of benthic organisms are expected to occur rarely, and PELs represent concentrations above which effects are expected to be frequent. The TEL and PEL for mercury are 174 and 486 ng/g, respectively. Kuskowkim River sediment samples ranged in mercury concentration of 20.9 to 341 microgram/kg.
- "Of the eight small central Kuskokwim River communities, Crooked Creek, Red Devil, and Stony River lack any residential water and sewer services." (3.22-23). A community water supply well is located in the village of Crooked Creek (3.22-61).
- "Concentrations of aluminum, iron, manganese, and arsenic exceed MCLs (Section 3.7.2.2.1, Water Quality) under baseline conditions in the shallow groundwater in some areas of the watersheds of Snow Gulch, American Creek, Anaconda Creek, and Crooked Creek." (3.22-61)
- The health section of the DEIS (3.22-59) states, "Water from the Kuskokwim River is considered fit for all purposes, including drinking and several villages between Crooked Creek and Bethel draw drinking water directly from the river (Section 3.7.2.1.1, Water Quality). Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

- Food
  - There are periodic fish advisories for pike and burbot in the mid-Kuskokwim River area due to mercury concentrations in fish tissue (above 0.15 mg/kg).
  - The health section of the DEIS (3.22-64) states, "Conservative estimates of increases in fish tissue mercury concentrations as a result of deposition of fugitive and stack sources indicated that the increase in fish tissue concentration would be very low (on the order of 2 – 3 percent), which is within the range of regional background fish tissue concentrations."
  - The health section also concludes that health effects related to exposure to bioaccumulated chemicals in waterfowl and wildlife would be low.

- Mercury monitoring of hair samples from residents in the project area found that the median levels (0.510 ppm) were similar to the state median level (0.46 ppm), lower than health threshold values or public health follow up values. The health section states (3.22-66), "In this perspective, it is very unlikely that even combined exposures to mercury from multiple pathways related to the proposed project (e.g., air inhalation, consumption of fish and game), would result in mercury concentrations in people that would exceed the health guidelines."
- Ex. 5 Deliberative Process (DP)

- Access to Subsistence Resources
  - The health section of the DEIS (3.22-74) states, "The potential impact of decreased access to and/or quantity of subsistence resources for the potentially affected communities would be low for the project phases."
  - In Appendix N of the DEIS, the BLM included a report on their preliminary ANILCA Section 810 analysis, and found: "This evaluation concludes that Alternative 2 may result in significant restriction to subsistence uses for the communities of Crooked Creek and Napaimute in relation to the mine site, the communities on the Kuskokwim River for barge traffic on the river (Bethel, Napaiak, Napaskiak, Oscarville, Kwethluk, Akiakchak, Akiak, Tuluksak, Upper and lower Kalskag, Aniak, Chuathbaluk, Napaimute and Crooked Creek), and the communities of McGrath, Nikolai and Takotna for increased access and competition from non-local users at the Farewell airstrip, along the pipeline right-of-way. In addition, potential spill scenarios involving ocean and river barge release of diesel fuel, cyanide, mercury, tailings dam failure, and release of untreated water from the pit lake and tailings dam after mine closure may also result in significant restriction to subsistence uses for the Kuskokwim River communities listed above." The report includes similar findings for the other action alternatives. During the period of public meetings on the DEIS, BLM convened Section 810 Subsistence Impact Hearings.

Ex. 5 Deliberative Process (DP)

Other Issues

- Unlined waste rock facility (WRF). We are concerned about potential leaching of metals, contaminants, and ARD into the groundwater.
- Surface and groundwater quality – standards and MCLs are exceeded (see above).

- Wetlands – concern about information in the PN that differs from information in the DEIS; concern about proposed changes to the functional assessment methodology - these proposed changes are not in the DEIS; not clear if any of the alternatives can be the LEDPA. 3(a) letter under preparation.
- Fugitive dust - concerns with the increased toxicity and exposure if the dust is contaminated with mercury, arsenic, and/or potentially acid generating (PAG) material. According to the DEIS, unpaved roads are assumed to be controlled at 90 percent, primarily with periodic chemical application and watering. However, if the source rock is determined to be PAG, then watering to reduce fugitive dust emissions may not be a good management practice as it would contribute to ARD/ML.
- Premature mine closure – potential adverse environmental, socioeconomic, and financial assurance impacts
- Mine pit dewatering – concern about lowered water table that could adversely affect 541 acres of wetlands and significantly reduce flow in Crooked Creek.
- Tailings storage facility (TSF) and dam safety - the TSF has the potential of causing substantial public health and environmental problems, and if the mine tailings impoundments are not properly constructed and/or maintained, a catastrophic event could occur, such as the Mt. Polley Dam failure. The DEIS states, "Because the area is remote and little infrastructure exists, the capacity for response to spilled substances is limited. While the statewide capacity for oil spill response is well established, there is minimal capacity to handle a spill of LNG, cyanide, or mercury."